

Home smart-phone based measurement of fecal calprotectin by IBD patients: correlation with laboratory assay and applicability as patient-friendly monitoring tool

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Introduction

Fecal calprotectin is an important tool for monitoring disease activity in IBD. As patient-tailored therapy continues to develop, we aimed to examine the efficiency and accuracy of a smartphone-based fecal calprotectin home-test in comparison to the established calprotectin Quantum-blue assay.

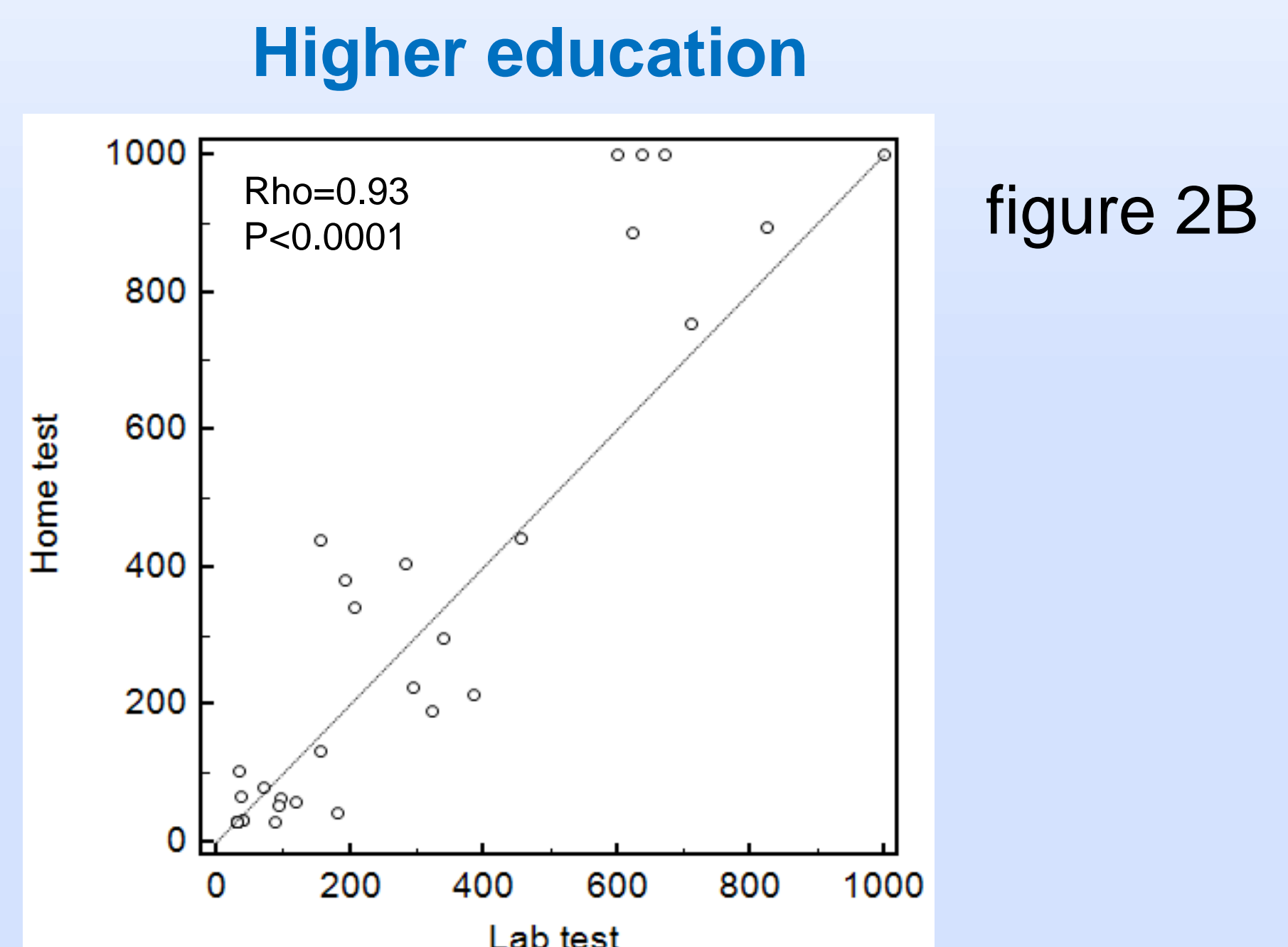
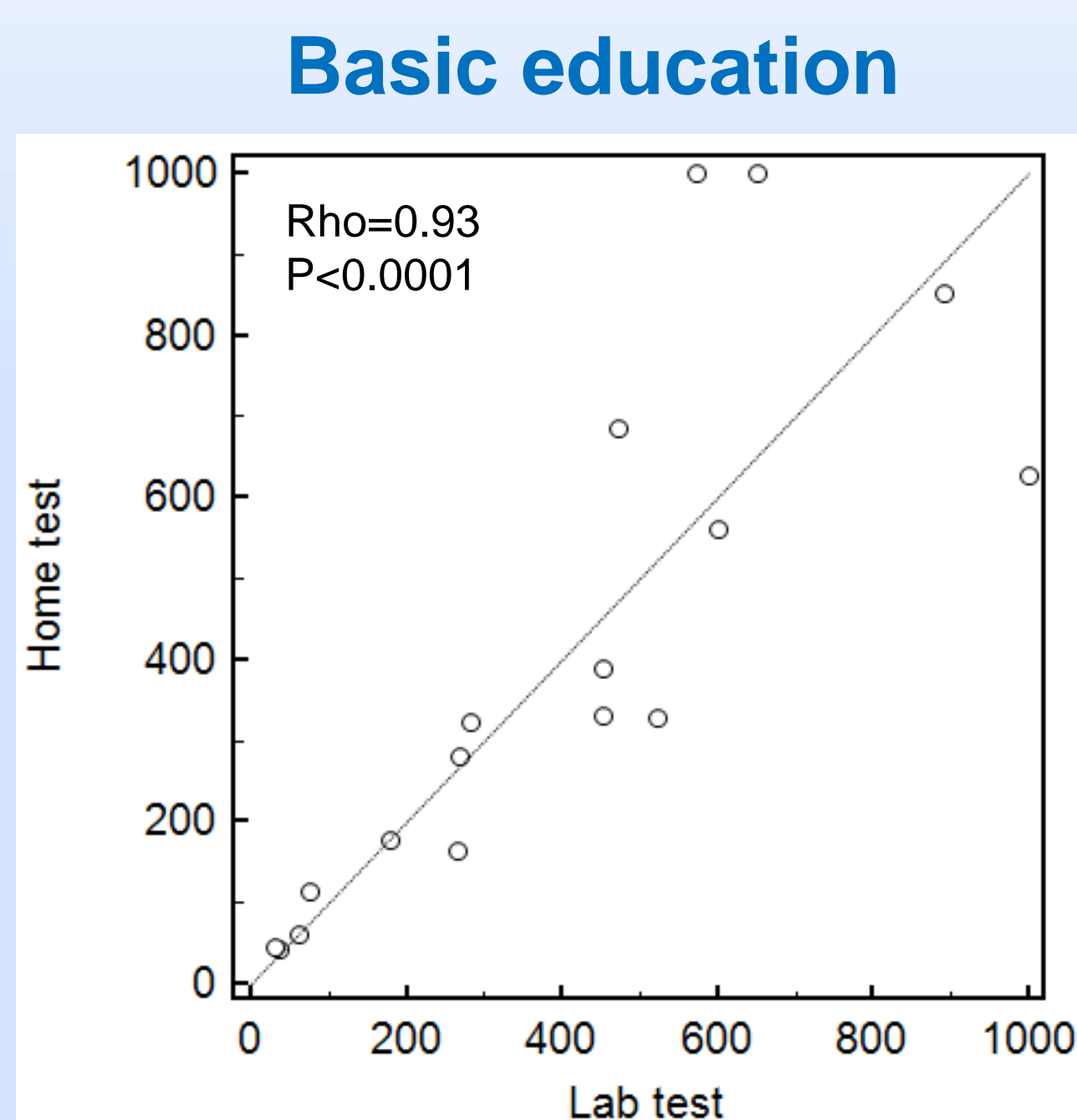
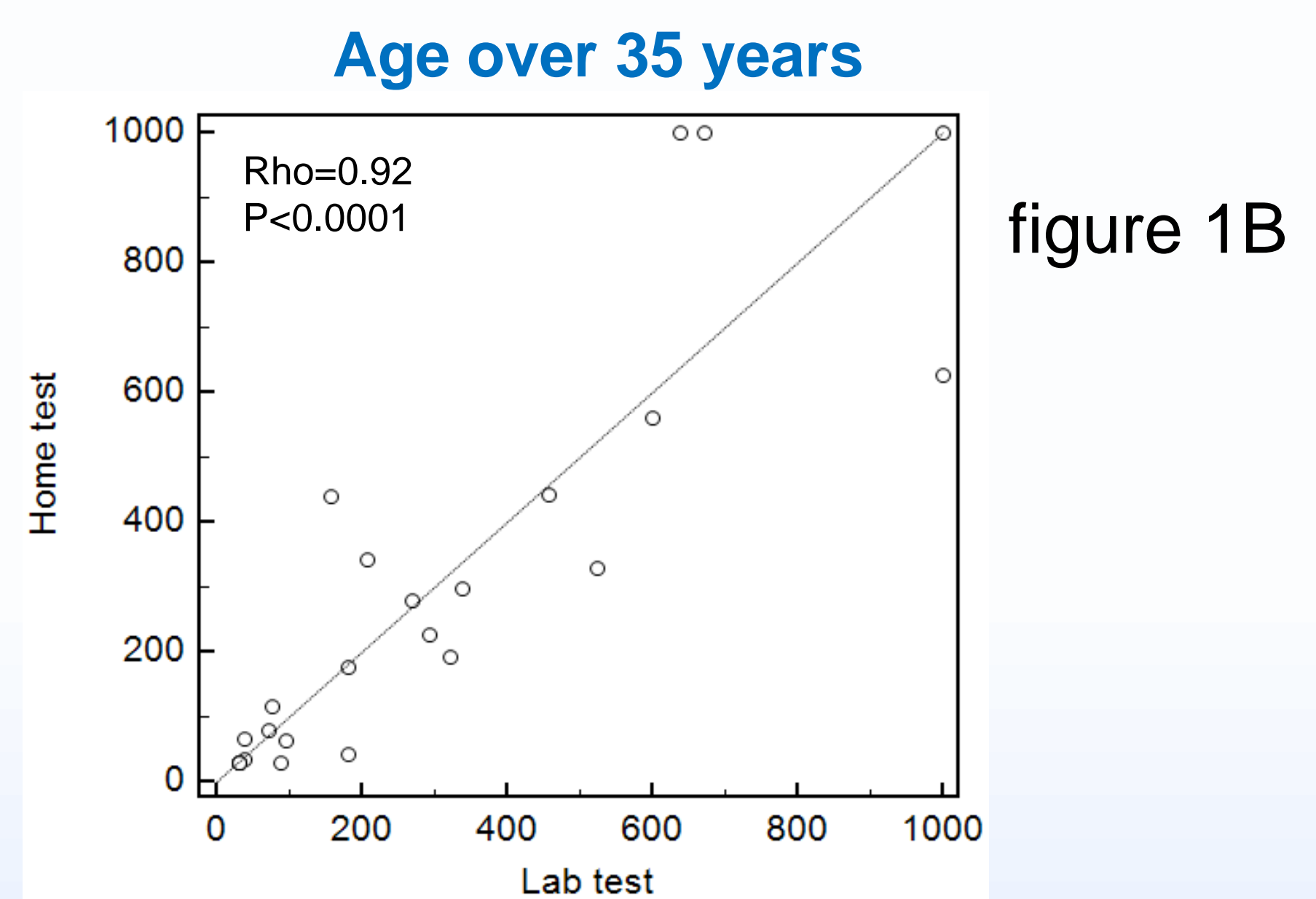
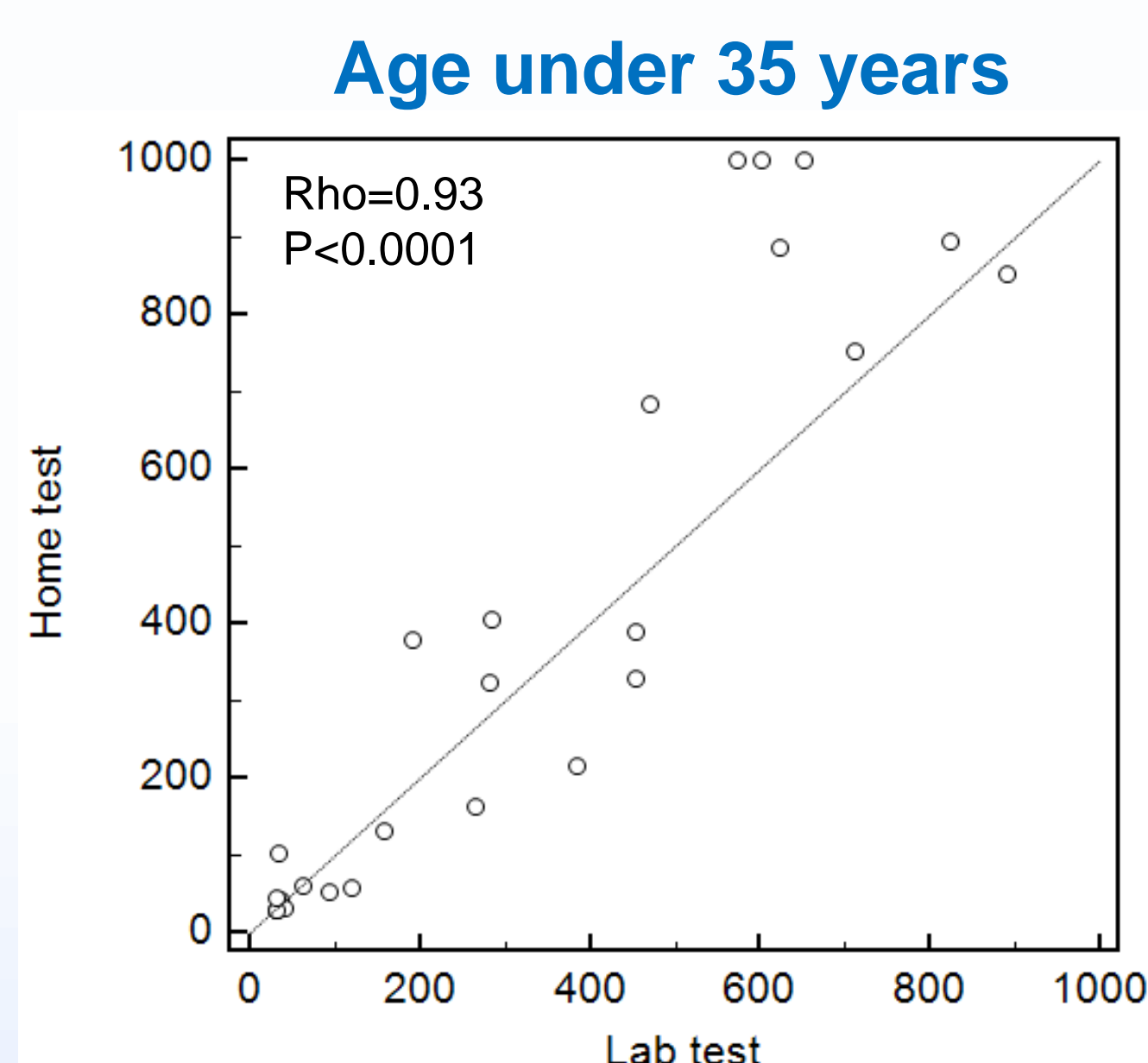
Methods

Prospectively-followed adalimumab-treated IBD patients performed a fecal calprotectin home-test (Buhlmann - IBDoc), consisting of fecal collection, extraction and measurement by a smartphone app using the phone's camera. Each patient performed the test under guidance by qualified personnel. The Quantum-Blue laboratory assay was performed simultaneously using the same stool sample for each patient.

Results

52 patients performed both tests (median age 35.5 years, 50% females, 92% Crohn's patients, 33% high school education or less). In 27/52 tests there was >25% difference in quantitative result of the paired tests. However, there was significant and strong correlation between results from both assays ($\rho=0.924$, $p<0.0001$). Educational status and age did not affect the correlation between tests results ($\rho>0.92$, $p<0.0001$, for both comparisons figures 1A,B and 2A,B).

Correlation between widely applied laboratory test & IBDoc home test:



Conclusions

Despite some numeric quantitative divergence, the results of the home fecal calprotectin test (IBDoc) correlate well with values-ranges obtained using conventional lab-based calprotectin test. Smart-phone based fecal calprotectin test may be a useful patient-friendly tool for monitoring of IBD patients at home, with minimal interference to their routine.